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Abstract

Inseminating heifers 72 hr after the PG injection in the melengestrol acetate/ prostaglandin F (MGA®/PG) estrous synchronization system, without regard to behavioral estrus, tended to improve (P=.2) the percent of heifers pregnant to artificial insemination (AI) when compared to synchronized heifers bred 12 h after they were first detected in estrus. In the timed inseminated treatment, heifers exhibiting behavioral estrus 48 to 72 h after PG tended to have a higher (P<.12) conception rate to AI than heifers showing estrus within 48 h after PG. For situations in which the number of heifers conceiving to AI is more economically important than first service conception rate, or when labor restrictions make estrous detection impossible, timed insemination at 72 h after PG in the MGA/PG system shows promise as a management option.

Keywords

Cattlemen's Day, 1992; Kansas Agricultural Experiment Station contribution; no. 92-407-S; Report of progress (Kansas State University. Agricultural Experiment Station and Cooperative Extension Service); 651; Beef; MGA/PG; Heifers; Timed mating; Conception rates

SYNCHRONIZATION OF ESTRUS IN YEARLING BEEF HEIFERS WITH THE MELENGESTROL ACETATE®/PROSTAGLANDIN $F_{2\alpha}$ SYSTEM: II. TIMED INSEMINATION[1,2,3]

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Summary

Inseminating heifers 72 hr after the PG injection in the melengestrol acetate/ prostaglandin $F_{2\alpha}$ (MGA®/PG) estrous synchronization system, without regard to behavioral estrus, tended to improve (P = .2) the percent of heifers pregnant to artificial insemination (AI) when compared to synchronized heifers bred 12 h after they were first detected in estrus. In the timed inseminated treatment, heifers exhibiting behavioral estrus 48 to 72 h after PG tended to have a higher (P < .12) conception rate to AI than heifers showing estrus within 48 h after PG. For situations in which the number of heifers conceiving to AI is more economically important than first service conception rate, or when labor restrictions make estrous detection impossible, timed insemination at 72 h after PG in the MGA/PG system shows promise as a management option.

(Key Words: MGA/PG, Heifers, Timed Mating, Conception Rates.)

Introduction

Artificially inseminating beef heifers to bulls selected according to expected progeny differences (EPDs) helps to minimize dystocia and obtain superior replacement females. Estrous synchronization allows a producer to decrease the number of days committed to an AI program and also to optimize labor requirements at calving time. But a serious problem in that system is the amount of time and expertise required to accurately detect estrus. We investigated the merits of timed insemination following the MGA/PG system of estrous synchronization to determine its effects on first service conception rate and percent of heifers becoming pregnant to AI.

Experimental Procedures

Yearling heifers (n = 576) were allotted randomly to two treatments. At each of three commercial ranch locations, all heifers received melengestrol acetate (MGA) (.5 mg/hd/d) for 14 d, with prostaglandin $F_{2\alpha}$(Lutalyse®) injected 17 d after the conclusion of MGA feeding. At the time of PG injection, serum was collected for progesterone analysis. All heifers with progesterone concentrations above 1 ng/ml were classified as puberal.

At each location, the heifers were artificially inseminated (AI) by two or three inseminators to three AI sires. Sire and inseminator were distributed equally between the two treatments. Heifers were bred either 1) 12 h after first detected in estrus or 2) 72 h after PG

[1]The authors express their appreciation to Don Kruger and Tom Harrington for their expert assistance in artificially inseminating the cattle.

[2]Partial financial assistance was provided for this project by Select Sires, Inc. Plain City, Ohio.

[3]Appreciation is expressed to the three cooperating ranches: Matador Cattle Co., Wichita, KS; Clint Huntington, Eureka, KS; and Randy Mills, Florence, KS.

injection. First service conception rates were determined by rectal palpation 45 to 70 d after AI.

Results and Discussion

Of the total heifers in the study, 31.0% of those bred 12 h after first detected estrus became pregnant to AI compared to 36.3% in the timed insemination group (P = .13)(Table 1).

Based on concentrations of progesterone, 66% of the heifers were puberal, with no differences between treatments. Of those puberal heifers, 65.2% showed estrus and were bred 12 hrs later; 65.6% of those bred conceived. Of those bred 72 hr after PG, 52.8 had shown estrus and 62.1% of those bred conceived. Of the heifers classified as puberal but not showing behavioral estrus, 43.0% conceived to the timed insemination (Table 2).

In the timed inseminated treatment, heifers showing behavioral estrus within 48 h after PG had a 49.0% pregnancy rate compared to 64.4% (P = .13) for those in estrus 48 to 72 h after PG. Table 3 indicates that a few (7.7%) heifers with low progesterones, thus not considered cycling, conceive to AI.

These experiments demonstrate that timed insemination 72 h following estrous synchronization with MGA/PG may increase the percent of heifers pregnant to AI.

Table 1. Expression of Estrus and AI Pregnancy Rate of All Heifers

	Insemination treatment	
Item	12 h after estrus	72 h after PG
No.	287	289
% Showing estrus	47.7	39.1
% Pregnant to AI	31.0[a]	36.3[b]

[ab]Row means tend to differ (P = .13).

Table 2. Expression of Estrus and AI Pregnancy Rates of Heifers Considered Puberal

	Insemination treatment	
Item	12 h after estrus	72 h after PG
No.	187	195
% Showing estrus	65.2	52.8
% Pregnant to AI		
if they showed estrus	65.6	62.1
if they didn't show estrus	0[a]	43.0
of total	42.7[b]	51.8[c]

[a]By design, heifers in this group were not inseminated if they did not show behavioral estrus.
[b,c]Row means tend to differ (P = .2).

Table 3. Expression of Estrus and Pregnancy Rates of Heifers Not Considered Puberal

	Insemination treatment	
Item	12 h after estrus	72 h after PG
No.	100	94
% Showing estrus	16.0	10.6
% Pregnant to AI	9.0	6.4